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A matter of foresight: How practices enable (or impede) organizational foresightfulness

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Abstract

Emphasizing practice as the site of the emergence of strategic foresight, this paper draws on the contemporary turn to 'practice' to examine how the organizing practices of members positioned further down the organization may facilitate (or constrain) their ability to enact foresightful actions. Adopting a case-based approach, three software companies engaged in four new product development projects served as our empirical research sites. With emphasis placed on their innovation teams' everyday practices, data for the empirical inquiry were collected using the qualitative methods of semi-structured interviews, ethnographical observation and project archival documents. Explicating the observed foresightful practices and their underlying activities under the general rubrics of organizing architecture and social co-ordination, we identified over-compartmentalization, over-determinism and (in)congruence-of-values as quintessentially embedded organizing practices, that constitutively enable (or impede) organizational foresightfulness. We conclude the paper with a discussion of the managerial implications and some limitations of our research.

Introduction

Strategic foresight is crucial to organizational success in rapidly changing environments (Andriopoulos and Gotsi, 2006; Constanzo, 2004; Manu, 2007) and especially important in contexts of greater complexity and genuine uncertainty where interventions cannot be prescribed

in advance (Boisot and McKelvey, 2006; Mendonça, *et al.*, 2009). This has triggered research interest in analyzing the wider social, historical, and intellectual context within which foresight emerges or fails (Stiglitz and Bilmes, 2008; Turner, 1976). The current interest in strategic foresight results from two key drivers. First, organizations want to understand the potential implications of emerging technological trajectories and overcome the limits on their ability to prepare for an unknown future (Constanzo and Mackay, 2010; Rigby and Bilodeau, 2007; Tsoukas and Shepherd, 2004a), and, second, empirical evidence suggests strategic foresight could lead to flexible, but desirable organizational outcomes such as adaptive learning (Antonacopoulou, 2010), ambidexterity (Bodwell and Chermack, 2010) and innovation (Drew, 2006; van der Duin and den Hartigh, 2009).

It is fair to note among these streams of studies the existence of a tacit assumption that top managers are the sole source of organizational ‘foresightfulness’. This locus-related attribution has led to a burgeoning literature exploring the cognitive and psychological factors that may enable (or impede) the cultivation of managerial foresight (Booth *et al.*, 2009; Day and Schoemaker, 2004; Mackay and McKieran, 2004). However, this locus-related attribution tends to discount the contribution of people positioned further down in the organization to organizational foresight. Although recent research has highlighted and irrevocably link everyday situated activities and micro-interactions of organizational members to organizational foresight (Andriopoulos, 2006; Cunha *et al.*, 2006), questions remain concerning *how* these practices may contribute to the emergence of organizational foresight. These questions are often sidestepped due to the theoretical and methodological complexities involved in mapping the tasks, connections and architectures that foresight processes require. Drawing on activity theory, Waehrens and Riis (2010) observe that rigid activity systems and weak ties between organizational subsystems which often constrain the interactions between emerging social practices and an organization’s strategic intent is responsible for the inadequate understanding and enactment of foresight in organisations. Yet still, little is known not just about when organizational members take foresightful action – “action in

conditions of limited knowledge concerning both the extent to which future events may be anticipated and how to deal with them” (Tsoukas and Shepherd, 2004b:7), but also how the potential organising practices of organizational members positioned further down the organization may enable or constrain organizational foresight. We concur that such knowledge would be relevant in helping organizations successfully to manage their micro-level activities as they seek to balance their need to compete in the present and prepare for an unknown future (Abell, 1999).

In response to this challenge, this paper seeks to explore the potential for situated organizing practices to foster (or hamper) organizational foresight. We argue that the routines behaviours, activities and organising practices of ‘ordinary’ organization members have a genuine epistemological relevance to the theory and practice of organizational foresight. The paper contributes to the literature on strategic foresight in the following ways: First, while prior research has stressed factors that contribute to the enactment or failure of managerial foresight, this paper draws on the practice turn in contemporary social theory to explore how the situated practices and activities of ‘ordinary’ organizational members may enable or constrain organizational foresight. Second, employing a qualitative case-study approach, the paper opens up new possibilities for rethinking why some organizations may be more ‘foresightful’ than others. We develop our contribution in the context of the software industry which is driven by radical innovations, complex technologies and an uncertain market (Easingwood *et al.*, 2006; Eisenhardt and Tabrizi, 1995). The paper is organized as follows. In the next section, the salient literature on the practice and failure of strategic foresight is discussed. Following this, we present a practice approach to strategic foresight after which we explain our research methodology. Next, we present our findings. The paper concludes with a discussion of our findings and the implications of the research for theory and practice.

Strategic foresight: Enablers and inhibitors

In the face of intense global competition and higher customer expectations, the term ‘foresight’ has enjoyed a sustained rise to prominence in organising. Referring to foresight as a human attribute, Chia (2004: 22) frames it as a “refined sensitivity for detecting and disclosing invisible, inarticulate or unconscious societal motives, aspirations, and preferences and of articulating them in such a way to create novel opportunities hitherto unthought and hence unavailable to a society or organization”. Recently, several studies have highlighted the process nature of foresight and the constructive processes underpinning organizational foresight. Slaughter (1995: 48), for example, delineates foresight as “[a] a process that attempts to broaden the boundaries of perceptions in four ways: by assessing the implications of present actions, decisions, etc (consequent assessment); by detecting and avoiding problems before they occur (early warning and guidance); by considering the present implications of possible future events (proactive future formulation); [and] by envisioning aspects of desired futures (normative scenarios)”. The processual perspective, therefore, is grounded in the widespread recognition that foresight is not a positivistic science but rather a contextual process of ‘way-finding’ driven by anticipation, imagination, continuous probing, and the enactment of the future (Andriopoulos and Gotsi, 2006; Constanzo and Mackay, 2010; Tsoukas and Shepherd, 2004a). This has led to the promotion of scenario planning (van der Heidjen, 1996), counterfactual analysis (Booth *et al.*, 2009), peripheral visioning (Brown, 2004), competitive intelligence (Neugarten, 2003) and scenario thinking (Wright and Cairns, 2011), as some of the foresight practices that can help organizations to prepare for the future.

The current paradigm is deeply rooted in the assumption that top managers are solely responsible for organizational foresight (Schwandt and Gorman, 2004). Hence, recurrent themes on recent theory have increasingly focused on the cognitive capabilities of managers (e.g. Mackay and McKiernan, 2004) as a potential resource to explain the enactment or failure of organizational foresight. This has brought to the fore the consequences of faulty managerial reasoning as a potential antecedent to the illusion of control which destroys organizational competencies. For example, Chermack (2004) argues that over-reliance on ‘bounded rationality’ (Simon, 1982)

restricts the development of coherent ‘pictures’ of the future. This may happen especially when the organization is enjoying relative success with its current strategy. Bounded rationality as defined by Morecroft (1983: 133) implies the “severe limitations on the information processing and computing abilities of human decision makers”. Here, managers may manifest cognitive inertia, and get entrapped in obsolete assumptions, schemas, expectancies, inferential processes and mental models that blind them to perceive and enact emerging reality. Thus, while strategic foresight challenges normative assumptions, thereby reducing bounded rationality, the reliance on bounded rationality in itself is a major obstacle to developing foresightful actions.

Similarly, studies have examined some psychological barriers to organizational foresight with emphasis on top managers (e.g. Mackay and McKiernan, 2004; Wright *et al*, 2005). Giving ontological priority to trans-individual values and beliefs in theorizing organization cognition, this stream of studies often cite ‘group think’ phenomenon – “a mode of thinking that people engage in when they are deeply involved in a cohesive in-group, when the members’ striving for unanimity overrides their motivation to realistically appraise alternative course of action” (Janis, 1982: 9), as the prevalent barrier to emergent foresight processes. A failed foresight exercise reported by Hodgkinson and Wright (2002) adds to the growing empirical support for these theoretical observations. Additionally, hindsight bias (over-exaggeration of the likelihood of predicting an outcome before its occurrence) and foresight bias (an over-simplified view of the future) have been found to restrict foresightful actions in practice (e.g. Davies, 1987; Mackay and McKiernan, 2004b; Mackay *et al*, 2006; Williams, 2006).

Recent theorizing on strategic foresight has concentrated on managerial perception and enactment of the likely future, and how they come to change subsequent behaviour (Ilmola and Kuusi, 2006; Mackay, 2009; Tsoukas, 2004; Weick, 1996). Of particular significance in these studies is the proposition that organizational actors have a penchant for placing excessive emphasis on the past or the future, which tends to restrict their ability to spot subtle changes in the present, entrapping them in obsolete assumptions, schemas, expectancies, inferential processes and mental

models. Hence, managers formulate hypotheses based on their extant prejudices which can be supported by supposedly compelling evidence. This gives rise to visions of the future which lead to path dependencies (Schwartz, 2005).

The brief review of the literature provided above demonstrates interesting insight into the enactment and failure of organizational foresight. Even though scholarly interest in the relationship between organizational practices and organizational foresight has persisted for some time (Cunha *et al.*, 2006; Tsoukas and Shepherd, 2004c; Waehrens and Riis, 2001), empirical work exploring the contingency role of ‘ordinary’ organizational members in enabling or impeding organizational foresight is sparse. We extend this line of research by examining the organizing practices of ‘ordinary’ organizational members to explore how they may strengthen (or hinder) the cultivation of organizational foresight. Emphasizing practices as the site of emergence of foresightful actions, the foresight literature has produced evidence that organizational practices are relevant for understanding strategic foresight (e.g. Cunha *et al.*, 2006; Sarpong, 2011; Sarpong and Maclean, 2011, Waehrens and Riis, 2001). A practice approach, we argue, could help extend our understanding as to how the everyday practices of organizational members positioned further down the organization may enable (or prevent) organizational foresight to ensure continuous survival in rapidly changing environments.

A practice approach to strategic foresight

We propose to draw on the ‘practice turn’ in contemporary social theory as an alternative theoretical lens to help us understand strategic foresight. Contributing to futures ‘becoming’ and to the understanding of people’s subjective experiences and their shared theories on social life, practices help to fill the deep epistemic gap between what people say they do and what they actually do (Barnes, 2001; Bourdieu, 1990). The theory of practice is concerned with the taken-for-granted

sense of space and routines of actors as inscribed in the ways they enact their practices (Schatzki, 2005). In this regard Reckwitz (2002: 249) describes a ‘practice’ as a “routinized type of behaviour which consists of several elements, interconnected to one another: forms of bodily activities, forms of mental activities, ‘things’ and their use, a background knowledge in the form of understanding, know how, states of emotion and motivational knowledge”. For Foucault (1988: 102-103, cited in Malave, 1998), practices are “those places where ways of doing and speaking meet and interconnect, and which ‘possesses’ up to appoint their own specific regularities, logic, strategy, self evidence and ‘reason’”.

Temporally unfolding and permeating all social life, we argue that practices have a genuine epistemological relevance to the theory and practice of foresight because they are not only constituted in language and ongoing interactions (Sarpong and Maclean, 2011), but also shape and give rise to the bundles of everyday ‘doings’ of actors in their situated activities (Schatzki, 2005; 2001). Strategic foresight as a human capacity to connect past, present and the future to cope with uncertainties, we argue, is a social practice played out in the everyday situated work of organizational actors as an actualization of a continuous process of *becoming* (Tsoukas and Chia, 2002; see also Maclean et al., 2012). From this perspective, strategic foresight emerges as an ongoing social practice whose routines and activities are enacted on an everyday basis, sometimes with very little reflection, from an unintended action to an unintended outcome in the moment. A practice approach to strategic foresight therefore gives ontological priority to those regular discernible patterns of activities that take place within the ambit of the praxis of actors. Epistemological primacy is placed on the actors’ quest to understand the future of their complex business environment, which is characterized by uncertainty, serving to condition the actors’ behaviour and conduct in their everyday situated practice.

Driven by these assumptions, we conceptualize strategic foresight in this study as the bundles of human actions and practices in context geared towards the creative evaluation and reconfiguration of sources of potentialities into future resources and productive outcomes within

the contingency of the moment. Following contemporary practice thinkers (e.g. de Certeau, 1984; Dreyfus, 1991; Lave and Wenger, 1991) who conceptualize practices as flexible and relational in context, we ontologically treated activities, values and beliefs, relationships, practical ‘coping’ and background knowledge as the organizing logics or the components of the *field of practices* (Coulter, 2001; Schatzki, 2001) around which foresight as a social practice, may get constituted, reproduced and adapted. Thus, transcending the individual subject to focus on discernable coordinated patterns of collective actions and practical activities (Schatzki, 1996), we place primacy not just on consciousness, but also on internalized habits, skills and dispositions as well as reflexive awareness in theorizing the reproduction of foresightful actions.

Research methodology

We develop our contribution in the context of the global software industry, since it is characterized by complex interaction between rapidly evolving computer technologies and an uncertain fast moving market (D’Aveni, 1994; Eisenhardt and Tabrizi, 1995; Hagel and Brown, 2008). We chose this industry in order to improve the comparability between cases and offset the effect of industry differences (Ellinger *et al.*, 2005). Three firms of comparable size based in the South West of the UK, and involved in the pioneering of a series of innovative products for different market segments, were selected as our empirical research sites. This enabled comparative analysis between the cases used in the study. Since all three organizations were running more than one project, we devised the following purposeful sampling criteria (Patton, 2002) to select the four projects included in the study so as to reduce variations while enhancing their commonalities (Yin, 2003). First, project(s) required the commitment of significant resources to be pioneered. Second, the project entailed the development of an innovative product incorporating new or unfamiliar technology to the organisation. Third, the project employed Microsoft’s technologies including their user and data interfaces in creating the platform architectures on which the products were to

be built on. In order to preserve their anonymity, the three organizations go by their pseudonyms: Interlab, Kemitech and Mercury.

Table 1: Comparative biographical sketches of case organisations

Organization (and key facts)	Area of activity	Business sectors	Selected project(s)
<i>Interlab</i> [Founded 1991, employs 150 staff, annual turnover £10m. in 2009-10]	Development of specialist software applications and provision of associated services in support of these applications.	Central and local Government, utilities, emergency services, GIS and spatial data management, bespoke management	Planning application software for national sports agency
<i>Kemitech</i> [Founded 2000, employs 20 staff, annual turnover £2.5m. in 2009-10]	Bespoke software solutions, development, interface engineering, high integrity systems assurance services internet technologies and applications.	Central and local government, defence, aerospace, and transport sectors.	Traffic congestion software for local government. Train graph application software for rail companies.
<i>Mercury</i> [Founded 1982, employs 60 staff, annual turnover £6.2m. in 2009-10]	Sales and mobile retail management solutions, investigative software independent IT networks, hardware and the consultancy on best-fit IT solutions	Airlines, railways, intelligence agencies, law enforcement agencies, and ferries.	Investigation software for security services.

Our chosen level of analysis was the product innovation teams of the various organizations because they comprised ‘ordinary’ organizational members located further down in the hierarchy. More importantly, they are known to represent the very “level at which observable changes take place in the way work is done and the management of innovation process can be witnessed” (Birkinshaw *et. al.*, 2008: 282). Serving as the locus for the development of new products and services used to drive strategic diversification and corporate renewal (Daneels, 2002; Dougherty, 1992), the organizations we studied solely relied on their respective innovation teams to exploit distributed organizational expertise and limited resources to remain competitive not just in the present but also in the future. From this perspective, we argue that innovation teams have an

agentic responsibility for making important decisions related to the exploration and exploitation of potential future opportunities and limits in their situated practice. The decisions they make in their situated practice always imply some assumption about negotiating a successful course into the future. In this regard, they are expected (knowingly or unknowingly) to balance their short-term performance imperatives with the long-term ‘foresightful’ needs of the organization, even though they are ‘ordinary’ organizational members located lower down the hierarchy. This appears to us as a very interesting problematic which is highly relevant for our chosen level of analysis and the context of the present study, given that foresight in innovation teams appears not only as essential for practical ‘coping’ but also relevant for organizational foresight.

Given the paucity of empirical research emphasizing ‘practice’ as the site for the emergence of strategic foresight, an exploratory qualitative research approach was found to be much more meaningful and appropriate to advance insight into its enactment in the social context in which the innovation teams are embedded (Eisenhardt, 1989; Eisenhardt and Graebner, 2007). In this regard, qualitative methods of data collection were adopted to help us capture the actors’ lived experiences as well as their inherited knowledge which were of prime importance in generating relevant insights into their everyday situated practices. Data for the study were collected over a twelve-month period, and we utilized semi-structured interviews as the main data collection method. In each company, we interviewed all innovation team members for the specific projects under study, as well as their team leaders. A total of 24 interviews were conducted. Interviews usually lasted 45-50 minutes and were digitally recorded and transcribed. In addition, to the interview data, documentary evidence (e.g. electronic share point, newsletters, and marketing materials), which is viewed as a rich source of insight (Adam and Healy, 2000), was collected from the case companies to supplement the interview transcriptions and to help build up a solid baseline understanding of the various projects, their individual contexts and events which may have influenced team members. Furthermore, a total of 20 ethnographical observations of project meetings, including observations of informal conversations between team members, allowed us to

gather insight into the everyday situated practices of the teams, capturing and deepening our understanding of ‘unverbalised’ rules and relevant group norms (Silverman, 1993). The frequent informal conversations with members of the innovation teams not only helped to reduce the psychological distance between the team members and the investigators to a minimum (Schwartz and Schwartz, 1955), but also served as a tool for the identification of recurrent discourse features necessary to extend our understanding of the relation between the linguistic form of such texts and the broader socio-cultural world in which they were produced.

The data collated from disparate sources were then triangulated into a whole (Jick, 1979), studied thoroughly and reflected upon to see whether they matched correctly with what was heard and seen in the field. Interesting issues raised by research participants were then used to further probe the data to match the various accounts of the ‘doings’ and ‘sayings’ of the research participants in their situated activities. The full data analysis then followed three steps. First, following our theoretical perspective, the initial textual analysis focused on mapping the ‘doings’ and ‘sayings’ onto the ‘organizing logics’ of human activities, values and beliefs, relationships, practical ‘coping’, and background knowledge. This was also an opportunity to identify some recurrent phrases which were also “analytically converted” (Strauss, 1978: 30) to fit into these categories. Here, the analysis explicitly focused on the elucidation of those situated practices that had the potential to enable (or impede) foresightful actions, producing a broad range of segments that were further categorized based on their similarities and analytical connexions.

Drawing on theoretical insight from the extant foresight literature, the identified segments were then analysed and interpreted iteratively until common themes emerged and became saturated (Ezzy, 2002; Suddaby, 2006). These themes were then sorted, reconstituted (Strauss and Corbin, 2008), and indexed to generate the analytical categories of organizing architectures and social coordination. Probing further the connections and conceptual properties of the respective categories, we developed the thematic frameworks of over-compartmentalization, over-

determination and (in) congruence-of-values which we used to explore viable theoretical explanations.

Table 2: Emerging themes and their conceptual properties

Emerging themes	Facilitating foresightful action	Constraining foresightful action
Over – compartmentalisation	Relatively risk free structures of engagement which encourages experimentation without undermining organisational stability and business focus.	The ghettoization of original thought and conceptual innovation. A quarantined area used to constrain and control alternative views alien to normative consensus.
Over – determinism	Contextual integration and synthesis of fragmented but compelling visions of the yet-to-be-realized innovation.	Over emphasis on formal knowledge and technical rationality in the framing of problems and the evaluation of future potentialities and limits in the present.
(In)congruence -of - values	Creating an idealized vision and a shared interpretation of the yet-to-be realized innovation through knowledge sharing.	Internalised values that act as barriers to open communication. The dismissal of alternative and evolving value systems more reflective of a wider societal trends and emerging norms.

Following this, the final categories in the form of thematic frameworks were then applied to the entire dataset by annotating them with numerical codes which were also supported with short descriptors that elaborate the headings. Indexing here was also about making sense of the gaps between identified themes in order to develop a meaningful and more robust understanding of the data to enable subsequent interpretation and verification of meanings. Systematic and rigorous comparison of the indexed themes with the existing literature enabled us to build up understanding of how the various innovation teams experienced the world and the identification of logical patterns to produce generalities (Ritchie and Spencer, 1993). Finally, the data was then re-arranged under the key themes in a matrix. Typologies were generated and causal association between the

various themes were made. Emerging patterns were then used to develop greater insight and form descriptive explanations of the enablers and inhibitors of strategic foresight in practice.

Empirical findings: What are the practices that enable (or impede) strategic foresight?

The analysis of the data collected produced insights regarding innovation teams as a flexible organizational subsystem, but one with its own institutionalized organizing practices and relationships which include power structures, control systems and rituals (Johnson and Scholes, 1993). We acknowledge that while members of innovation teams may get caught up in these practices and relationships which shape and give rise to what they can or cannot do in their situated activities, they are not only continuously replicated through various formal and informal socialities, but are also actively reproduced and re-embedded in their everyday situated activities. We present these practices and their underlying activities under the general rubrics of organizing architecture and social coordination to explore how foresightful actions may be enabled (or impeded) in practice.

Organizing architecture

Organizing architecture as used here refers to the adaptive formal and informal emergent structures that govern the situated practices of the various innovation teams. This framing of terms is in distinction from Mintzberg's (1979) perspective on organisational architectures which assumes the institutional forms of the object it studied. Following Miller (1993), we argue that the *organizing* architecture of the innovation team is made up of the canonical rules, authority relationship, and responsibilities of the members of the innovation team that governs what they do in their everyday situated practice. Taken as an expression of an innovation team's functional unity or social life (Barnes, 2001), the conceptual apparatus associated with practice theory (e.g. duties, spaces, values, and understandings) become far more apparent. The case evidence shows

that these practices in a bounded system interrelate, shape and complement the emergence of observed patterns and regularities of actions geared towards the creative exploration and exploitation of potential past and future possibilities and limits in the present. From the case analysis, the influence of organizing architecture on foresightful action manifests themselves in two closely related forms of activities (over-compartmentalization and over-determination) across the three innovation teams.

Over-compartmentalization

While the normative organizing architecture of an innovation team help give form to the innovation process, they often resulted in ‘packing’ team members in subgroups or tribes based on their roles, duties, relational rights, and functions. Too much emphasis on this structural and relational imperative is what we refer to as over-compartmentalization. This organizing arrangement, we observed, generates adverse sectional interest and stifles a team’s ability to take relevant actions aimed at improving the collective understanding of the cost, returns, efficiency of a chosen pathway into the future. Contrary to developing a multiple perspective to solving problems, a team member’s perspective is taken seriously only if their contribution is directly related to his or her area of professional expertise.

We may come up with something which technically seems to be a minor problem but could still influence the overall performance of the product. The developers will say well, it is not really urgent or related to testing for ‘bugs’ and then override that point of view, or simply push it back for the next cycle. It is easy for the smaller issues that are important to you to get pushed back until you end up in a dilemma. Maybe the tester’s point of view could be taken more seriously. They need to bear in mind we are also looking at the bigger picture. (Mercury team member A)

Our respondent’s views are been neglected because she is deemed to have no technical expertise in software interface development which falls beyond the theoretical boundaries of her role as a quality assurance officer. While this member may be making a valuable point that could bring to fore the weak cues-to-causality, often sidestepped or entirely missed when they appear tangential to strategy context (Mackay & Mckiernan, 2004), little effort is expended evaluating the

viability of her ‘layman’ inputs. The feeling of alienation experienced by this member and the other testers could profoundly limit their ability to think the unthinkable. In the future, they will easily succumb to pressures of conformity (Vit, 2007) and seldom challenge the organizational logics and processes, especially those that do not fall into their technical area of expertise. As echoed in a study by Hodgkinson and Wright (2002), this kind of organizing dynamic tends to promote compartmentalized thinking and pluralistic ignorance (Miller and McFarland, 1987), stifles the emergence of diverse epistemologies required to shape foresightful actions.

We need to know exactly what is expected of our products in a few years time or which way the products are going to be developed. It’s like the model railway sneaking in through the back door and now everyone is committed to working on it without actually knowing whether it was the right project to go for. (Kemitech team member A)

The over-compartmentalization of team members based on their technical expertise also suggest that team members are seldom privy to developments in other functional domains managed by colleagues on the same project. Since roles are narrowly defined, individual jobs are carefully prescribed with no overlaps. Daily jobs are simply parcelled out to members based on their core competences. The exploration of identified possibilities in the present then becomes the preserve or prerogative of a select few members who are privileged enough to have the idea fall within their technical domain. As explained by one respondent:

Mr. X spends a period of time investigating the technology and developing the product concept, at which point all the specifications get written on how the frame should work and then it gets thrown at the development team. We are told, “right... implement something useful based on this and that”. We then sort of tweak it and just hope it works. It just seems odd that everything springs from him, and then we have to put things on to it instead of being part of the concept development process. (Mercury team member E)

There are two issues to unpack here. First, the arrangement described by the respondent seems to encourage specialization, and the working patterns give form to the mangle of *resistance* and *accommodation* that characterize social practices (Pickering, 1993). This expectation is real but difficult to realize because it also diminishes the very expertise it aims to reinforce (Dreyfus and Dreyfus, 2005). Interestingly, two of the team leaders went to lengths to rationalize these kinds of arrangements by arguing that it helps them to control the project ‘scope creeping’ (Purvis and

McCray, 1999), quell unnecessary opposing opinions and latent political pressures that have the tendency of slowing down the development process. Nevertheless, we found that such arrangements often tend to restrict the ability of actors to explore their creative potential beyond the theoretical boundaries of their area of expertise (von Krogh and Nonaka, 2000), because the team leaders' construction of social reality, whether good or bad, serves as the template for building the desired image of the yet-to-be-realised innovation. Their personal experiences may end up blinding them to new and emerging opportunities. In this situation, team members, perhaps with the capacity to identify subtle cues and changes in the environment (Weick, 1995), are not consulted. Rightly they come to feel that their views are discounted, and as such their identities and skills are not only derogated, but also undervalued. Hence, they simply carry out their normal duties without necessarily committing to exploring alternative or competing potential futures that may come into view. This may lead them to become disenchanted, and adopt a reactive mode of 'coping' with the uncertainties surrounding the technology-market linkage process as a whole.

Over-determinism

Evidence also emerged that the choice of organizing architecture found in an innovation team determines the level of emphasis they place on formal knowledge and reasoning at the expense of other 'ways of knowing' and imagination when they engage with an unknown future (Mackay and McKiernan, 2004b). As argued by Patokorpi and Ahrenainen (2009: 2), "the theory of the knowledge society involves an assumption that a capability to procure and to utilize information is and will be a core competence of progress, innovativeness and competitiveness". The quest to amass a wide range of information or complete information before taking simple but pragmatic intelligent actions is what we refer to as over-determinism. Two members on different teams explained:

We can adapt the product for other markets, but then we hope the sales and marketing guys can identify other markets where it might be a useful solution and we can tailor it. That would be the best case scenario. (Mercury team member, D)

We tend to think fairly small scale, adapting the product to improve it but to achieve much as the same goal as it is at the moment. It would be the sales people that would come up with the radically different ideas that could push the product in a complete new direction. If there is a request, the project manager tends to do the overview of plans to take us down this direction. After which, we, the programmers, will work around the clock to achieve this specific goal. (Kemitech team member B)

In essence, while the teams are not involved in developing a bespoke product, they tend to channel their visioning efforts and energies into developing their products for particular markets. They are implicitly aware that the product could potentially be adapted to other markets, but then they expect those with marketing expertise to come to them with some market information before they leap into action. This implies viable ideas on alternative markets that may come up during their discussions are neither evaluated nor explored in detail as sufficient and what they deem as relevant information on their market viability is not ready to hand. Unsurprisingly, this approach to organizing, where primacy is placed on rationality, we found, tends to limit the ability of team members to take a step back to reflect on alternative actions within a totally new frame of reference (Dery, 1983), and often restricted the ability of some of the teams to evaluate and choose from alternative futures that could serve as the basis for intelligible actions (Chermack, 2004). Here, plausible alternative futures which may appear melodramatic or slightly unintelligible are discounted. This was usually the case when the team felt their reasonable knowledge of their technologies and markets gave them protection from competitive attacks.

We deal with a very narrow market, which I think in some sense is quite good for us. Like I say, we are fairly versatile when it comes to changing the layouts for particular customers. It is not like writing something cheap. They couldn't really do it. Cheapness comes in generic forms where you can just sort of write the programme and then mass-produce it. For our product, you just cannot simply mass-produce it. (Mercury team leader)

In a related development, the same team leader goes further to argue persuasively that:

The customers don't really care about technology. They want something that works. The only thing that the people who manage the actual software and the database say they do care about is: Is it easy to install? Is it easy to add a new one? Is it easy to back up when it fails? So, to a large extent again, they don't really care as long as it is standard Microsoft and uses standard tools. That is all that is interesting to them. (Mercury team leader)

Analysis of the extract above reveals how over-determination could cloud the collective effort to 'see' potential future possibilities in the present. Here, the actors demonstrate some penchant for reading evolving technologies and fleeting markets in a one dimensional linear manner, and lack the capacity to envision new meanings to create radically innovative, meaningful customer experiences and novel capabilities (Verganti, 2008). At the extreme, the evaluation of future possibilities and limits in the present may come to rely on advance statistical forecasting, and the probing of the consequences of emerging potential futures are based on complex quantitative models (Burt and van der Heijden, 2003). The second excerpt specifically demonstrates how the context within which firms compete and solve the problems of their mainstream customers may contribute to their inability to spot or foresee radical innovations that could alter existing technological trajectories (Christensen and Rosenbloom, 1996). Here, while the over-determination to focus just on the immediate value network may help the team to create value by applying customized expertise to clients' problems, it provides very little space or incentive for team members to explore new territories by way of encouraging the enactment of foresightful actions that require discontinuous leaps in imagination and creative ordering of perceptions of the plausible future (Schwartz, 1991) of their yet-to-be-realized innovations.

Social Co-ordination

Social co-ordination encompasses the self-regulation of collective social capacities, such as desires, interests, values and beliefs of the innovation teams. Following Ellwood (1910: 598), the term social co-ordination as used in ordering the analysis of the case evidence refers to "the regularity and co-ordination in mental interaction, inter-simulation and response, which brings to unity of aim the activities of individuals" engaged in a joint enterprise. Conceptualized as a background of practical coping with the uncertainties that characterize rapidly evolving technologies and fleeting markets, a team's social coordination conditioned their 'staying power' to explore and exploit future opportunities and limits within the contingency of the moment. Moving beyond a truncated

attribution of social coordination to anxieties, fantasies, expectations and hopes (Loveridge, 2009), we identified (in) congruence-of-values as determined by the values, beliefs and cultural orientation which constitutively gave form to the prevailing social co-ordinations we observed in the various innovation teams. It should be noted that values and beliefs by their social character are flexible and transmutable; hence the dispositions and values reported here were not only interpretive and embodied, but are more importantly, adaptive.

(In) congruence-of-values

Values encompass those deep-seated perceptual and cognitive representations of social normative beliefs, empathic feelings, motives and needs that drive actions and behaviours. Conceptualized as a unique human disposition that influences human behaviour and actions in context (Barnes, 2001; Schatzki, 2001), individual values may result in shared and possibly negotiated values and beliefs (Mackay and McKiernan, 2004b). In this regard, we found that while the innovation teams' enacted image of the future of the yet-to-be-realized innovation influenced their choice-oriented behaviours, their choices about the future were consistent with their collective values and beliefs. These collective values and beliefs acted as "a magnet that through its attractive force pulls the present [differential visions] towards an envisioned future" (van der Helm, 2009: 101, citing Polak, 1961) of the yet-to-be-realised innovation. For example, some team members reflecting on their personal motivation to work on their respective projects ended up talking about their shared values:

You know, there is always this pressure to deliver on time, but there is a kind of instant displeasure if we deliver late. If we deliver something that is poor in quality, the pain just goes on for the whole of your life and the life of the product. (Kemitech team member B)

Most of us really value working on this project because it is going to benefit the public somehow. I guess the management of public sports facilities is beneficial, so you know, we are making sure the final product is excellent. It is definitely going to do what it is supposed to do. We will make sure that it does a little bit more as well, because that is how to make a project which really succeeds – give them more than they ask for. (Interlab team member D)

In a related development, the Interlab project leader argued that:

People often put in a lot of man-hours if they believe it's of strategic value to our survival, and an added bonus if they feel there is a benefit to humanity. (Interlab project leader)

The shared values as espoused by these members are used as a proxy to interpret the teams 'commitment' to their organization's vision (Buchanan, 1974), indicative of their ability to interpret contextual cues and weak signals (Ilmola and Kuusi, 2006), re-definition of ideas and the imaginative mapping of potential future possibilities within the contingency of the moment. They frame their job to develop a future innovative product as a challenge to be mastered rather than a threat to be avoided. Here, the shared values may also act as perceptual screens or filters capable of influencing peoples' perception of reality, thereby providing them with necessary meaning for the strategic choices and actions they take in their situated practice (van der Heijden, 1996). The word 'believe', as used by the Interlab project leader, connotes some form of moral dimension to defining team members' propensities to commit to the innovation strategy. These moral codes or standards, which probably encouraged team members to 'believe' in what they do and commit to their responsibilities, could also be deciphered from the shared values and preferences espoused by some team members when asked to express their hopes, concerns and anxieties with reference to the product under development::

Probably, if we all get sued and end up in prison for ... I don't know, some sort of horrible liability and indemnity thing because our product totally messed up a serious police investigation or our product generated a huge amount of useless data, and that it is all entirely our fault and we go to prison. That would be pretty bad. (Mercury Team member C)

There is a company that does a large fire contract for the government. I and my mates have consistently refused to work on their project because that company also owns companies that make missiles. I was asked and I said, "NO! I am not working for them. I am not letting them do a security check on me. I am not letting them have my name, and it is not going to happen. I am not going on their books!" (Interlab team member E)

According to the principle of alternate possibilities, a person can only be held responsible for what they have done only, and only if they could have done otherwise (Frankfurt, 1969). The principle implicitly upholds the idea that "no one is ever morally responsible if causal determinism were true" (Fischer, 1982: 25). Interestingly, the respondents, by virtue of their moral values, are basically claiming responsibility for any success or failure that the future product could produce.

They tend to assume their actions today may serve as an antecedent to successful or dreadful consequences they are envisaging in the future, even though they do not have absolute control over how customers may decide to use the product. Hence, they come to accept that they have a moral obligation to explore all avenues and exploit all opportunities available that would improve the performance of their product. This goes to confirm that “in morality there is a premium on uniformity of moral values, so that we may count on one another’s actions and rise in a body against a transgressor” (Quine, 1979: 476).

However, these internalized personal predispositions and values which were found to support inquiry into identifying future possibilities only affirm ideals and do not provide a holistic understanding of the innovation team members’ overall beliefs which are fundamental representations of their own environments. For example, most of the values espoused by the Kemitech team members working on the defunct model railway project were found to be quite antithetical to the enactment of foresightful action. They came to the fore when various team members were asked the question: Whose head should ‘roll’ if the team fails to deliver?

As far as I am concerned, whether it sells or not, I’ve had a great time developing the product and it works. It’s not my responsibility to sell that now, and it wasn’t up to me to come up with the idea in the first place. That is up to the guy who said we want this model railway because we want to take it over there. I have delivered as part of my team, so it’s up to them to sell it. (Kemitech team member B)

Another Kemitech team member’s response in relation to the question of responsibility as well as future application possibilities of the model railway project had this to say:

To be honest, I am not a marketer, and I don’t know what the demand is for model railways. All I know is that people above me have told me to make this part of it, and so I did it because that’s what I am paid to do. I don’t go home every night and worry that the model railway won’t sell, I go home and worry if it won’t work or if there are any problems with what I have delivered, it’s not really my area of responsibility to start phoning people up and saying, “look, we have this great model railway here, have it”. (Kemitech team member C)

Going a step further to reinforce how incongruence of values could impede ‘thinking the unthinkable’, the Mercury project leader in a related development remarked:

We are talking with the consultant at the moment who I think would probably say that we have never really treated marketing strategically. I guess in some way we are constrained

by a lack of strategic vision. Anyway, you can say that is really my responsibility as much as someone else's. And that is probably true, although I would probably say, "no; it is the MD's job". (Mercury project leader)

Resolute in their views as to where responsibility lies, the responses given here can be described as a form of psychical and defensive avoidance which leads to heightened anxieties in engaging with the unknown future. Instead of the team embracing their 'agentic' responsibilities as a challenge to be mastered, they frame the uncertainties surrounding their environment as a threat to be avoided. While the existing organizing architectures may partly account for this 'buck passing', the prevalence of the unravelling counter-values, we suggest, has a damaging effects not just on the identification of perceptual cues, but also on situated integrated set of actions geared towards the exploration and exploitation of relevant opportunities for innovation (Sarpong and Maclean, 2011). In this regard, we argue that the question of value is more *fundamental* than the question of uncertainty surrounding the innovation process. This is so because the teams' shared values serve as a 'recipe' for their actions and judgements (Grinyer and Spencer, 1979) with regard to what constitutes potentialities and limits within the contingency of the moment.

Discussion and conclusion

Our research highlights how organizing practices can influence organizational foresight. We empirically studied how everyday situated practices and their underling activities may constitutively strengthen (or hinder) the enactment of foresightful actions in product innovation teams. Adopting an exploratory qualitative research approach for the inquiry, three software organizations and their four new product innovation projects served as the research sites. Placing ontological primacy on taken-for-granted routines and everyday practices resulting from the many activities and microscopic behaviours that take place in innovation, data were collected through qualitative methods of semi-structured interview, ethnographical observations and the analysis of archival documents from the projects. Analysis of the case evidence showed how the practices of organizing architectures and social coordination complement and operate in combination to

influence organizational foresight. Providing additional insight into how these practices manifest themselves, over-compartmentalization, over-determination, and (in) congruence-of-values were presented as embedded and intrinsically interrelated activities that act to influence the enactment of foresightful action geared towards the creative evaluation and reconfiguration of sources of potentialities into future resources and productive outcomes. It should be noted that these practices and activities are part of an interlocking appreciative system hence “the shadow of [one] is always implicated in the articulation of the other” (Chia, 1998: 4) and they could only be identified as praxiological instantiations with reference to the sayings and doings of a group of competent actors engaged in their situated activities.

The paper makes two main contributions to research in strategic foresight, in particular to the literatures on the enactment and failure of organizational foresight. First, tied to an empirically grounded understanding of future limits and possibilities in the present, we believe this study to be the first explicitly to concentrate on the micro level to explore how taken-for-granted organizing routines and practices could influence organizational foresight. In this regard, we have provided an empirical response to recent theoretical explications that emphasize the importance of studying strategic foresight as a social practice (Cunha *et al.*, 2006; Sarpong, 2011; Tsoukas and Shepherd, 2004c). Second, our emphasis on the practices of ‘ordinary’ organizational members lower down the organization signifies a paradigmatic shift away from managers who are often conceptualized as the sole locus of foresight to respond and contribute to past calls and demands for new approaches to the study and theorizing of strategic foresight in context that could lead to significant knowledge generation in organization science (Fuller and Loogma, 2009; Gracht, *et al.*, 2010). Nevertheless, the theoretical steps advanced in this paper make no attempt to replace or invalidate the cognitive and psychological oriented studies on strategic foresight. Rather, it complements them by seeking cumulatively to enrich our understanding of the contribution of ‘ordinary’ organizational members to organizational foresight. From this perspective, the key contribution is in narrowing the epistemic gap between the theory and practice of foresight.

While we acknowledge that the complexity of strategic foresight makes it difficult to develop simple managerial recipes, nevertheless the research findings suggest some managerially useful insights into the cultivation and management of strategic foresight. First, a lesson from this study is that managers need to take micro-level activities and practices seriously because the “future of the organisation is the result of the many activities that take place every day in an organisational setting” (Cunha *et al*, 206:196). In passing, one useful advice worth highlighting is that they will also have to tightly manage diverging and often conflicting personal values of organizational members to reduce ‘benevolent conspiracies’ that have the potential to undermine the envisioned future of their yet-to-be-realized innovations. In the broadest sense, choice-oriented behaviours of ‘ordinary’ organizational members need to be loosely managed (Peters, 1978; Peters and Waterman, 1982), but should also be actively monitored when possible. Second, managers also need to pay attention to developing flexible organizing architectures that provide a forum for polyphonic voices, often neglected during objective discourse, to be heard. This does not necessarily call for the ‘micro-management’ of mundane team practices. Rather, it is more about striving to integrate flexible organizing routines and procedures into their organizational processes as they seek to “influence the type of future [members] seek to achieve, how they manage their resources, the plans and strategies they construct, how much effort they put into their group endeavour, their staying power when collective efforts fail to produce quick results or encounter forcible opposition and their vulnerability to discouragement” (Bandura, 1997: 478). However, a word of caution is also necessary. Harnessing and managing differential values, for example, remains a fundamental management challenge. This is because mobilizing team members to cultivate the background skill of ‘coping’ that enables them to engage with the future while dealing with the challenges they face in their situated activities and personal lives can be counter-intuitive. However, it is always possible for management to build and maintain the relevant motivational value systems that have the potential to drive the emergence of practices that reward and foster foresightful action.

Finally, despite the present study offering several insights into the enablers and barriers to strategic foresight, it is not without its limitations. First, because practices by their nature are contingent and adaptive over time, care should be taken in generalizing the findings from the study to other software organizations or contexts. Second, the study at best can be described as cross sectional because of the limited time period over which the various innovation teams were studied (Harrigan, 1983). In this case, the lack of a longitudinal perspective (Scandura and Williams, 2000; Scott, 1987) suggests that we have only scratched the surface in understanding how situated practices enable (or impede) organizational foresight. In this regard, a longitudinal study replicating this research may therefore be necessary to ascertain whether additional insights and findings can be observed or generated. In addition, such a longitudinal study may also go further to explore the impact of foresightful action on organizational performance. This is a line of enquiry which may help persuade practitioners and academics alike to pay more attention to mundane practices that encourage the cultivation of organizational foresight. The impact of organizational performance needs to be understood not in terms of the balance sheet, but mainly in terms of the rate of adaptation of routines, practices and processes in response to an ever changing business environment.

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